



Relationship of Serum Dehydroepiandrosterone (DHEA), DHEA Sulfate, and 5-Androstene-3 β ,17 β -diol to Risk of Breast Cancer in Postmenopausal Women

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Abstract: Laboratory evidence suggests a role for dehydroepiandrosterone (DHEA) and its metabolite 5-androstene-3 β ,17 β -diol (ADIOL) in mammary tumor growth. Serum DHEA also has been related to breast cancer in postmenopausal women, but the relationship of ADIOL to risk has not been evaluated previously. To assess the relationship of serum DHEA, its sulfate (DHEAS), and ADIOL with breast cancer risk in postmenopausal women, we conducted a prospective nested case-control study using serum from the Columbia, MO Breast Cancer Serum Bank. Cases included 71 healthy postmenopausal volunteers not taking replacement estrogens when they donated blood and who were diagnosed with breast cancer up to 10 years later (median, 2.9 years). Two randomly selected controls, who also were postmenopausal and not taking estrogens, were matched to each case on exact age, date (\pm year), and time (\pm 2 h) of blood collection. Significant (trend $P = 0.02$) gradients of increasing risk of breast cancer were observed for increasing concentrations of DHEA and ADIOL, and women whose serum levels of these hormones were in the highest quartiles were at a significantly elevated risk compared to those in the lowest; their risk ratios were 4.0 [95% confidence interval (CI), 1.3-11.8] and 3.0 (95% CI, 1.0-8.6), respectively. The relationship of DHEAS to breast cancer was less consistent, but women whose serum DHEAS concentration was in the highest quartile also exhibited a significantly elevated risk ratio of 2.8 (95% CI, 1.1-7.4). Results of this prospective study support a role for the adrenal androgens, DHEA, DHEAS, and ADIOL, in the etiology of breast cancer.